

Revised 05/05

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ROCKY FLATS PROJECT OFFICE  
12101 AIRPORT WAY, UNIT A  
BROOMFIELD, COLORADO 80021-2583

05-DOE-00345

JUN 17 2005

Mr. Steve Gunderson  
RFCA Project Coordinator  
Colorado Department of Public Health and Environment  
4300 Cherry Creek Drive South, OE-B2  
Denver, CO 80246-1530

Mr. Mark Aguilar  
Rocky Flats Team Lead  
United States Environmental Protection Agency, Region VIII  
999 18<sup>th</sup> Street, Suite 500  
Denver, CO 80202-2466

Dear Mr. Gunderson and Mr. Aguilar:

The purpose of this letter is to provide an update to the April 29, 2005 notification of reportable concentrations of plutonium in surface water at Rocky Flats Cleanup Agreement (RFCA) Point of Evaluation (POE) surface-water monitoring station SW093, which is located in North Walnut Creek upstream of Pond A-1 in the Walnut Creek basin. The notification was accomplished by the Department of Energy (DOE), Rocky Flats Project Office (RFPO) through letter number 05-DOE-00284. The calculated 30-day moving average for plutonium-239, 240 (Pu) triggered the reporting requirements under RFCA Attachment 5, Section 2.4 (B) for the period March 13, 2005 through April 5, 2005 inclusive, using validated data (Table 1). As of April 6, 2005, the 30-day average for Pu is no longer at a reportable level (Enclosure 1). Analytical results for all samples that were used in the calculation are listed in Table 2.

Table 1. Reportable 30-Day Average Values for RFCA POE Monitoring Location SW093 Using Validated Data

Analyte	Reporting Period	Reportable Range
Plutonium	3/13/05 - 4/5/05	0.17 - 0.22

Table 2. Analytical Results for Composite Samples Collected at SW093 Used in the 30-Day Average Calculations (Validated through 3/21/2005 Sample).

Composite Sample Start Date	Plutonium-239, 240 (Pu) Analytical Result (dpm/l)	Plutonium-239, 240 (Pu) Analytical Result (dpm/l)
2/1/2005	0.007	0.003
2/14/2005	0.055	0.147
3/3/2005	0.105	0.259
3/21/2005	0.008	0.004
4/12/2005	0.031	0.007
4/13/2005	0.006	0.003
4/20/2005	0.003	0.005
4/26/2005	0.027	0.004

COR. CONTROL ☒ ☒  
ADMIN. RECORD ☒ ☒  
PATS ☐ ☐

Reviewed for Addressee  
Corres. Control RFP4/29/05 *[Signature]*  
Date By

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1/9

JUN 17 2005

### Downstream Water Quality Monitoring

Water flowing through SW093 also passes through the lower A-series ponds (Ponds A-3 and A-4) and North Walnut Creek before leaving the Site. RFCA Points of Compliance (POCs) GS11 (Pond A-4 outlet) and GS03 (Walnut Cr. at Indiana St.) again monitor this water. During the recent treatment of A-4 pond water, the treated water was temporarily held in Pond A-3.<sup>1</sup> A portion of the treated water in A-3 was pump transferred to Pond B-5 for subsequent offsite discharge. Pond B-5 discharges are monitored at POC GS08 before flowing to GS03. During the same period, a portion of the treated water in A-3 was pump discharged offsite directly (around Pond A-4) through POC GS11 below Pond A-4.

SW093 analytical results and the reportable 30-day average values were compared with those for pre-discharge samples collected from Ponds A-3 and B-5 prior to the March and April/May 2005 discharges and from RFCA POC monitoring stations GS08, GS11, and GS03 for those discharge periods (3/15 – 3/31/05 and 4/29 - ongoing). Monitoring results from Ponds A-3 and B-5 (predischage samples), GS08 composite samples (4 of 8), GS11 composite samples (1 of 2), and GS03 composite samples (6 of 11) met stream standards and were below reporting thresholds for the same period. Analytical results for the remaining GS08, GS11, and GS03 samples are not available as of 5/16/2005.

### Preliminary Review of Upstream Monitoring Data

When these reportable actinide concentrations were initially observed, Kaiser-Hill completed a preliminary review of data collected for the sub-drainages upstream of SW093. At the start of FY2005, seven upstream monitoring locations were operational (see Enclosure 2). As the Site moved toward closure, operation of several of these locations have been terminated and/or data collection has been compromised. Table 3 gives the status of each location shown in Enclosure 2.

Table 3. Status of Upstream Monitoring Locations Tributary to SW093.

Location Code	Status
GS32	Flow to GS32 eliminated on 1/7/05; location removed 3/1/05
GS49	Construction in area caused flooding of flume Jan-Feb 2005, affecting flow data and sample collection; fully operational as of 2/10/05
GS60	Fully operational
GS61 (GS61A)	Location temporarily removed on 2/24/05 for NPWL removals (no flow data or sample collection 2/24-4/6/05); reinstalled 60 feet upstream and fully operational as GS61A on 4/7/05

<sup>1</sup> Pond A-3 was isolated from N. Walnut Creek inflows. N. Walnut Creek was diverted to Pond A-2 and detained.

SW018	Construction of Functional Channel 2 (FC2) caused flooding of flume starting 3/16/05, affecting flow data and sample collection; location currently flooded by newly constructed wetland on FC2 making flow-paced sampling impossible; SW018 has been converted to time-paced sampling (analytical data can be evaluated but loads can not be calculated) until location can be upgraded
SW119	Flow eliminated and location removed on 2/28/05
SW120	Flow eliminated and location removed on 3/15/05

The latest available data for monitoring locations upstream of SW093 are given in Table 4. These data (coupled with the measured/estimated flow volumes and sample periods) do not suggest any of these locations are the sole contributor of actinide load to SW093. While relatively high results are associated with location GS49, Pu loads from GS49 since 2/1/05 represent approximately 11% of the Pu load at SW093. The likely source of the Pu at GS49 is disturbed soil in the yard west of B776 (the B776 demolition area has been isolated from downstream drainages, with all water being collected for treatment). Site personnel conclude that the likely cause of the reportable Pu values at SW093 is increased transport of solids with low-level contamination associated with the construction of Functional Channels #2 and #3.

During the period of construction (mid-February to April 10, 2005) diversion ditches, coffer dams, and periodic pumping were used to manage water. Real-time measurements of turbidity at SW093 during this period show higher than normal levels associated with each pumping period, further suggesting increased solids transport (see Enclosure 3). A comparison of flow rate to turbidity clearly shows a significant improvement after completion of the functional channels (Enclosure 4).

Table 4. February-May 2005 Analytical Results from Locations Tributary to SW093.

Location Code	Composite Sampling Period	Pu Result (pCi/l)	Am Result (nCi/l)
GS32	None	NA	NA
Sampling terminated and flow eliminated at GS32 on 1/7/05			
GS49	2/3-3/16/05	0.103	0.039
GS49	3/16-4/11/05	0.660	0.123
GS49	4/11 - 4/20/05	0.286	0.096
GS49	4/20 - 4/25/05	0.572	0.134
GS49	4/25 - 4/30/05	0.089	0.103
GS49	4/30 - 5/3/05	0.927	0.273
GS49	5/3 - 5/12/05	*	*
GS49	5/12 - In Progress	Sample in Progress	Sample in Progress

JUN 17 2005

Location Code	Composite Sampling Period	Pu Result (pCi/l)	Am Result (pCi/l)
GS60	1/30-4/12/05	0.018	0.063
GS60	4/12-4/14/05	0.016	0.017
GS60	4/14 - 4/25/05	-0.001	0.007
GS60	4/25 - 4/30/05	0.008	0.014
GS60	4/30 - 5/9/05	*	*
GS60	5/9 - In Progress	Sample in Progress	Sample in Progress
GS61	1/20-2/7/05	0.026	0.030
GS61	2/7-4/8/05	No Sample	No Sample
GS61A	4/8-4/12/05	0.110	0.104
GS61A	4/12 - 4/26/05	*	*
GS61A	4/26 - 5/4/05	*	*
GS61A	5/4 - In Progress	Sample in Progress	Sample in Progress
SW018	1/20-3/9/05	0.010	0.003
SW018	3/9-3/16/05	X	0.011
SW018	3/16 - 4/9/05	No Sample	No Sample
SW018	4/9 - 4/11/05	0.063	0.060
SW018	4/11 - 4/18/05	No Sample	No Sample
SW018	4/18 - 4/26/05	0.020	0.001
SW018	4/26 - 5/4/05	*	*
SW018	5/4 - 5/12/05	*	*
SW018	5/12 - In Progress	Sample in Progress	Sample in Progress
SW119	10/13/04 - 2/28/05	0.044	0.075
Sampling terminated and flow eliminated at SW119 on 2/28/05			
SW120	10/13/04-2/23/05	0.091	0.071
SW120	2/23-2/24/05	0.163	0.046
SW120	2/24-3/15/05	No Sample	No Sample
Sampling terminated and flow eliminated at SW120 on 3/15/05			

Notes: \* = Analysis is in progress at the laboratory; results have not been received by the Site

X = Result rejected through validation process

### Recommendation

The findings and conclusions of the past SW093 source evaluations suggest that low-level distributed actinide source areas exist within the SW093 sub-drainages. Significant progress towards closure has resulted in large areas of disturbed soils. Preliminary data evaluation

4/

JUN 17 2005

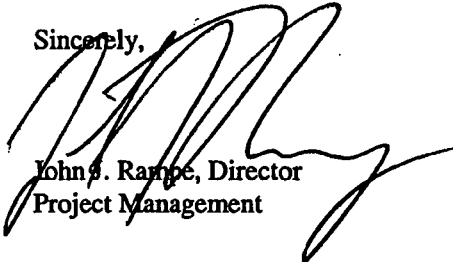
suggests that, though no new source terms have been identified, increases in soil/sediment transport associated with Site closure activities have been occurring.

In consideration of past source evaluation findings and conclusions, the short-term of this reportable period, and the similar characteristics of this event compared to previous solids-transport related reportable values, RFPO does not believe a more comprehensive source evaluation is warranted. Based on the abbreviated data evaluation included herein, increased solids transport in association with functional channel construction is the probable cause of the reportable Pu values at SW093. RFPO proposes the following in response to these reportable values at SW093:

- (1) Continued routine monitoring and data evaluation as required by RFCA and the Site Integrated Monitoring Plan. Should review of subsequent data raise issues not currently being considered, additional evaluation would be necessary.
- (2) Continued application and maintenance of comprehensive erosion controls and revegetation measures within the areas tributary to SW093 and other drainages as an integral part of Site closure.

If you have any questions on this letter, please contact me at 303-966-6246 or John Stover at 303-966-9735.

Sincerely,



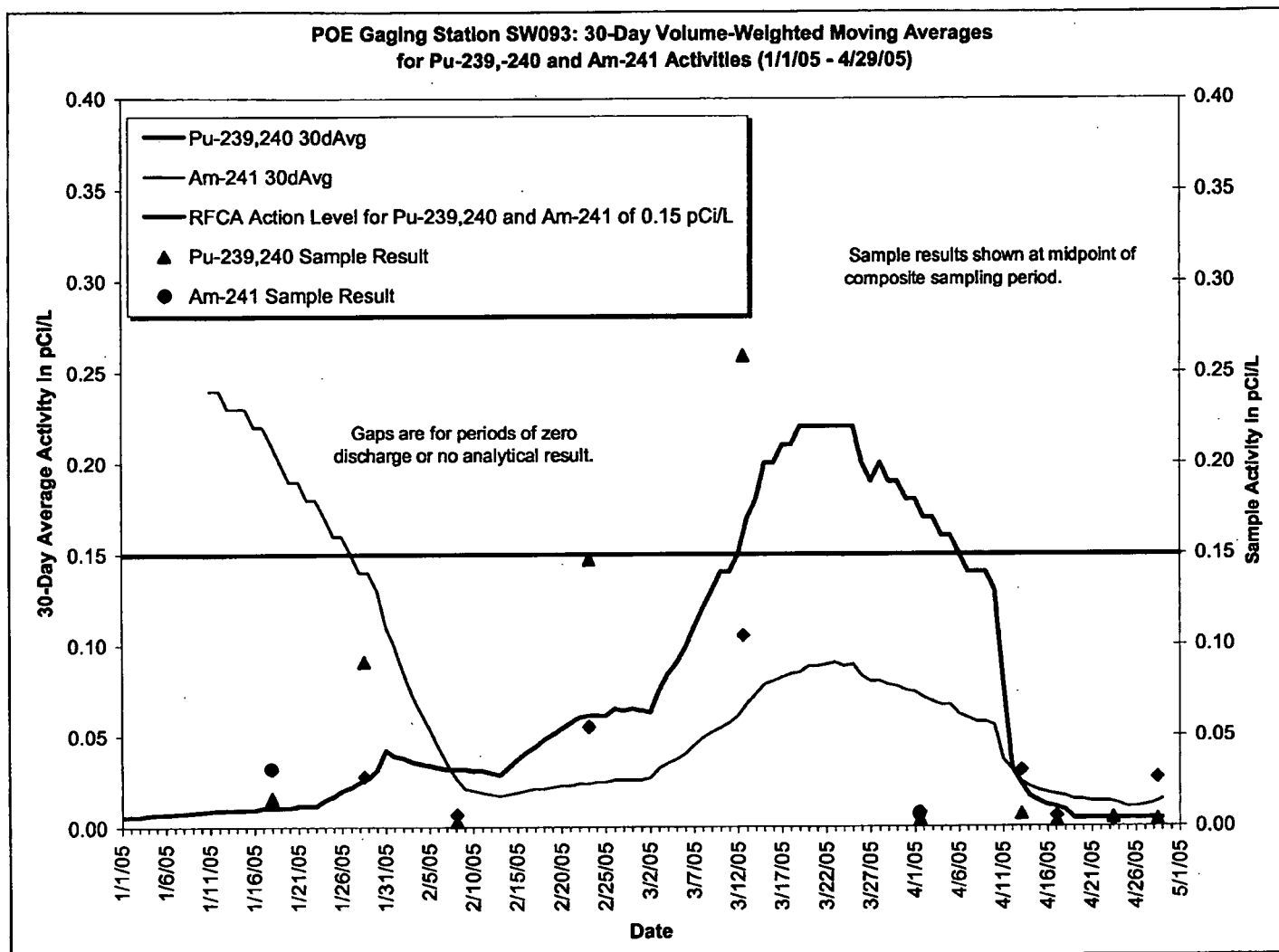
John S. Rampe, Director  
Project Management

Enclosures

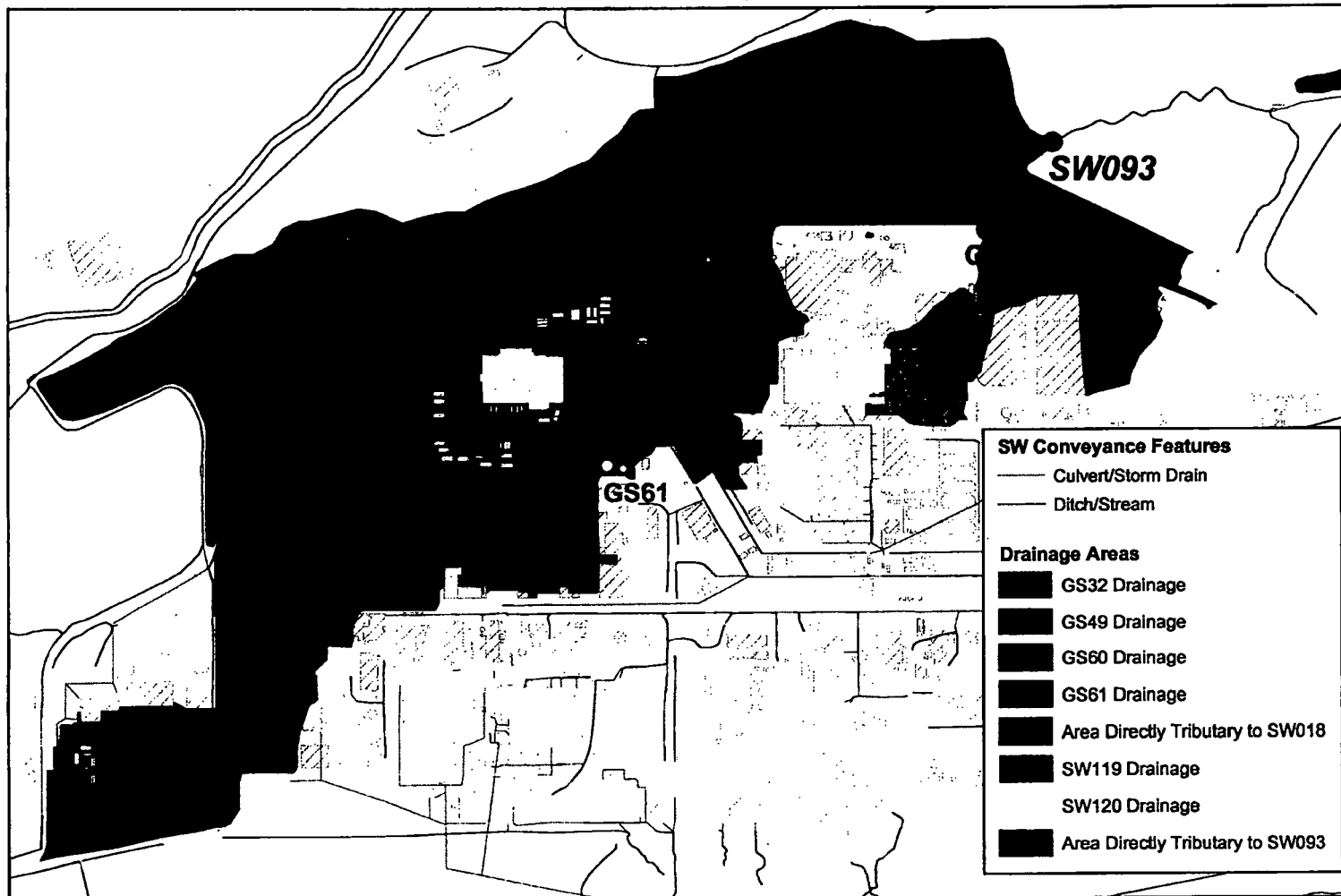
Cc w/Enc:

R. Schassburger, CPM  
J. Stover, PM  
M. Roy, OCC  
D. Shelton, K-H  
R. Nininger, K-H  
L. Brooks, K-H  
A. Nelson, City of Westminster  
S. Garcia, City of Broomfield  
C. Johnson, City of Arvada  
V. Lucero, City of Thornton  
S. Standley, City of Northglenn  
Administrative Record

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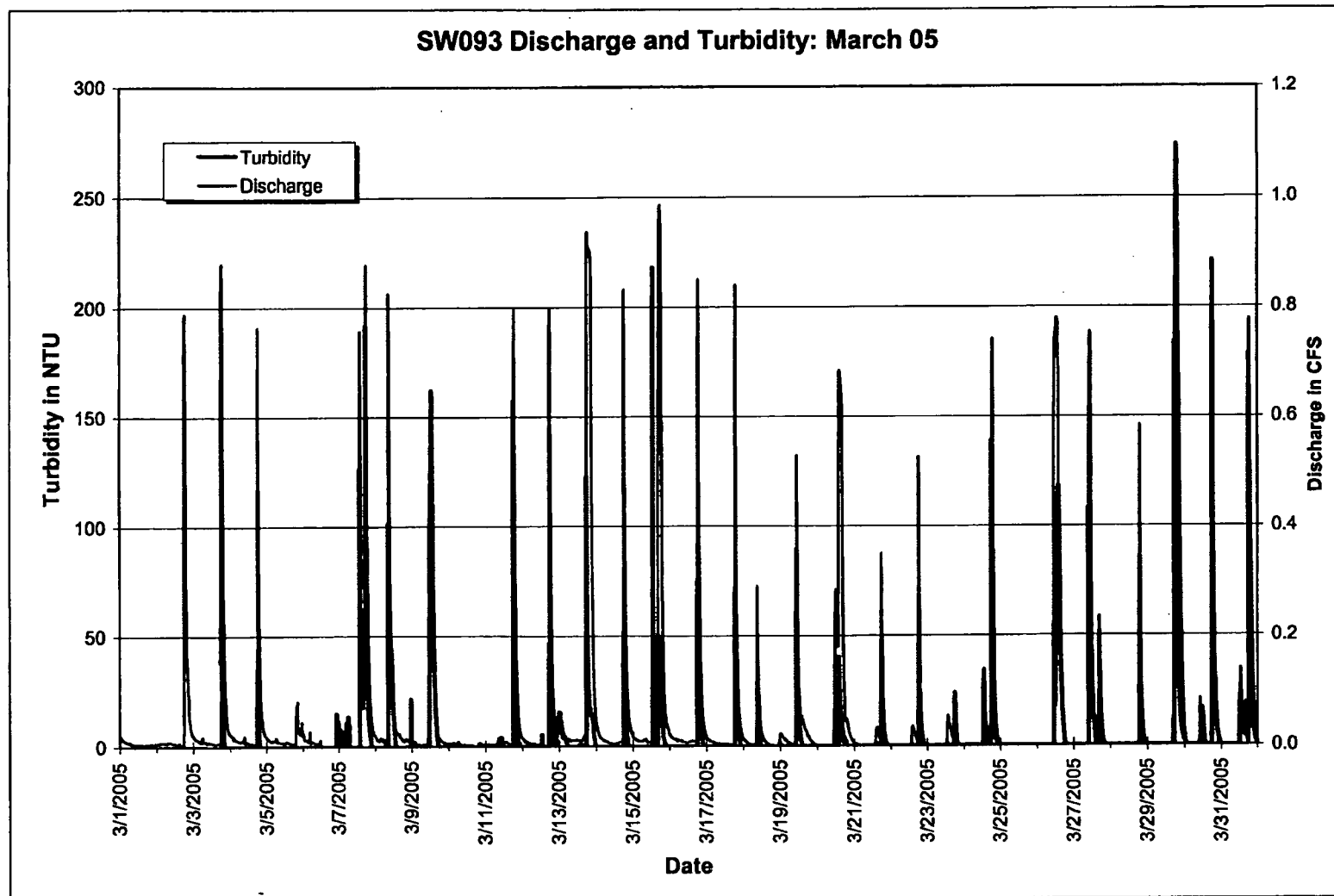


Enclosure 1. Calculated 30-Day Average Values and Individual Composite Sample Results at SW093: 1/1/05 – 4/29/05.



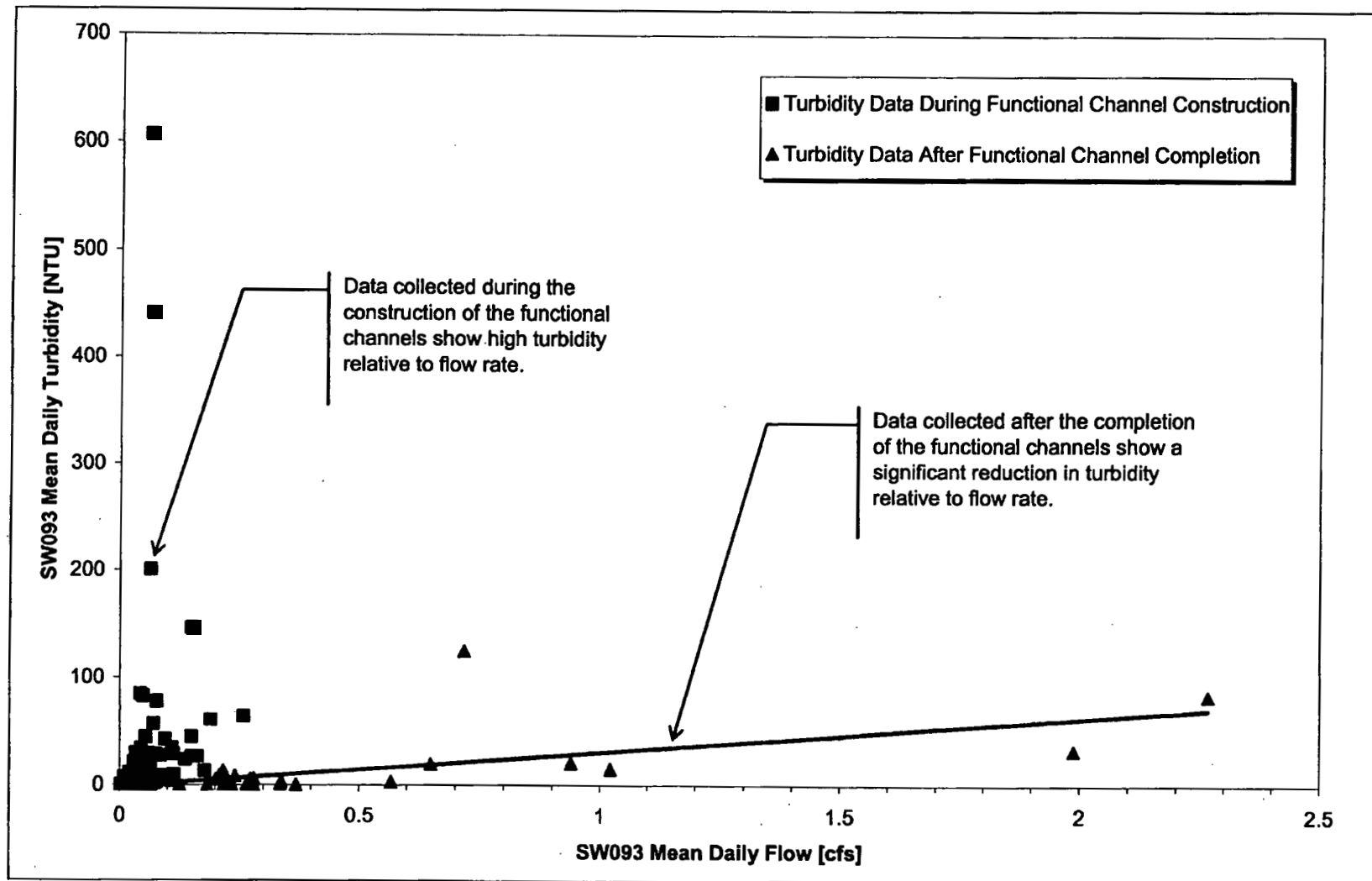
Note: GS61 and GS49 are tributary to SW018.

**Enclosure 2. Map Showing SW093 Sub-Drainages and Upstream Monitoring Locations.**



**Enclosure 3. Real-Time Turbidity and Flow Rate at SW093: March 2005.**





Enclosure 4. Variation of Turbidity with Flow Rate at SW093: February-April 2005.

6/9